

Application No. 10/624,847
June 24, 2005
Page 3

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A dental device for exposing teeth to electromagnetic radiation, comprising:

a dental band having a substantially planar configuration, and having a substantially planar surface that is constructed to be at least partially applied and attached to at least one tooth; and

at least one electromagnetic energy emitting element attached to the dental band and oriented to emit electromagnetic radiation in a direction away from the electromagnetic energy emitting element substantially planar surface toward a tooth surface.

2-28 (Previously Cancelled)

29. (Previously Added) The dental device of claim 1, wherein:

the at least one electromagnetic energy emitting element comprises at least one light source capable of generating electromagnetic energy; and

the dental device further comprises a power supply operably connected to the at least one light source, the power supply providing energy to the light source.

30. (Previously Added) The dental device of claim 29, wherein the at least one light source is externally positioned with respect to the dental band.

31. (Previously Added) The dental device of claim 30, wherein the at least one electromagnetic energy emitting element comprises at least one optical fiber.

Application No. 10/624,847
June 24, 2005
Page 4

32. (Previously Added) The dental device of claim 31, wherein the at least one electromagnetic energy emitting element comprises a layer of woven optical fibers.
33. (Previously Added) The dental device of claim 1, wherein the at least one electromagnetic energy emitting element is a light emitting diode.
34. (Previously Added) The dental device of claim 1, wherein the at least one electromagnetic energy emitting element is a heat emitting element.
35. (Previously Added) The dental device of claim 1, wherein the electromagnetic energy emitting element is an optical fiber panel.
36. (Previously Added) The dental device of claim 35, wherein light is emitted from a single side of the optical fiber panel with a relatively high intensity.
37. (Previously Added) The dental device of claim 35, wherein light is emitted from a single side of the optical fiber panel with a relatively high brightness.
38. (Previously Added) The dental device of claim 1, and further comprising a protective layer attached to the dental band and constructed to be at least partially removed to reveal at least one compartment.
39. (Previously Added) The dental device of claim 38, wherein the at least one compartment is at least partially filled with a dentifrice.
40. (Previously Added) The dental device of claim 1, and further comprising a dentifrice in proximity to the dental band, the dentifrice comprising a photosensitizer that is at least partially activated upon emission of electromagnetic energy from the electromagnetic energy emitting element.

Application No. 10/624,847
June 24, 2005
Page 5

41. (Previously Added) The dental device of claim 40, wherein the dentifrice further comprises an active ingredient.
42. (Previously Added) The dental device of claim 41, wherein the active ingredient comprises fluoride.
43. (Previously Added) The dental device of claim 1, and further comprising a dentifrice in proximity to the dental band, the dentifrice comprising a photosensitizer in combination with an active ingredient.
44. (Previously Added) The dental device of claim 43, wherein the dentifrice is a transparent gel.
45. (Previously Added) The dental device of claim 43, wherein the active ingredient is caused to be at least partially activated upon the emitting of electromagnetic energy from the electromagnetic energy emitting element.
46. (Previously Added) The dental device of claim 45, wherein the dentifrice comprises a fluoride containing gel.
47. (Previously Added) The dental device of claim 45, wherein the dentifrice comprises an anti-caries agent.
48. (Previously Added) The dental device of claim 45, wherein the dentifrice comprises an antibacterial agent.
49. (Previously Added) The dental device of claim 39, wherein the dentifrice comprises a desensitizing agent.

Application No. 10/624,847
June 24, 2005
Page 6

50. (Previously Added) The dental device of claim 39, wherein at least part of the protective layer is constructed to be peeled off of the dental device to expose the dentifrice.

51. (Previously Added) The dental device of claim 39, wherein:
at least part of the protective layer comprises a material subject to degradation by enzymes contained in a subject's mouth; and
degradation of the protective layer by the enzymes exposes the dentifrice.

52. (Previously Added) The dental device of claim 39, wherein the dentifrice comprises a desensitizing agent that can be activated when electromagnetic energy is emitted by the electromagnetic energy emitting element.

53. (Previously Added) The dental device of claim 39, wherein the dentifrice consists essentially of a fluoride containing gel.

54. (Previously Added) The dental device of claim 39, wherein the dentifrice comprises an anti-caries agent.

55. (Previously Added) The dental device of claim 39, wherein the dentifrice comprises an antibacterial agent.

56. (Previously Added) The dental device of claim 39, wherein the dentifrice comprises a photosensitive agent.

57. (Previously Added) The dental device of claim 39, wherein the dentifrice comprises an active ingredient sensitive to electromagnetic radiation.

Application No. 10/624,847

June 24, 2005

Page 7

58. (Previously Added) The dental device of claim 38, wherein the at least one compartment comprises a plurality of compartments.

59. (Previously Added) The dental device of claim 1, wherein the electromagnetic energy emitting element is an electrochemiluminescent material.

60. (Previously Added) The dental device of claim 1, wherein the dental device comprises a dry chemical heat-emitting material.

61. (Previously Added) The dental device of claim 1, wherein the dental device is constructed to emit heat after a user bites down on the dental device.

62. (Previously Added) The dental device of claim 1, further comprising a circuit for varying at least one of an intensity, distribution and duration of electromagnetic radiation emitted from the electromagnetic energy emitting element.

63. (Previously Added) The dental device of claim 1, further comprising a transparent panel disposed over the electromagnetic energy emitting element.

64. (Previously Added) The dental device of claim 1, wherein the electromagnetic energy emitting element includes a non-illuminated side, and the dental device further comprises a reflective panel disposed between the electromagnetic energy emitting element and the dental band, so that the reflective panel is positioned against the non-illuminated side of the electromagnetic energy emitting element.

65. (Previously Added) The dental device of claim 1, further comprising a diffuser panel disposed over the electromagnetic energy emitting element.

Application No. 10/624,847

June 24, 2005

Page 8

66. (Currently Amended) A dental device for exposing teeth of a subject to electromagnetic radiation, comprising:

a dental strip structure having a substantially planar configuration, and having a substantially planar surface that is structured to fit over and attach to teeth of the subject; and

at least one optical fiber configured to provide electromagnetic radiation to at least one tooth, the at least one optical fiber being disposed on or within the dental strip structure so that the electromagnetic radiation is directed in a direction away from the substantially planar surface and toward at least one tooth of the subject.

67. (Previously Added) The dental device of claim 66, wherein the at least one optical fiber comprises a plurality of optical fibers defining an optical fiber panel.

68. (Previously Added) The dental device of claim 66, the at least one optical fiber comprising a plurality of optical fibers and the dental device further comprising a power source in communication with the plurality of optical fibers, the power source providing power to the plurality of optical fibers.

69. (Previously Added) The dental device of claim 66, the at least one optical fiber comprising a plurality of optical fibers and the dental device further comprising a circuit for varying at least one of an intensity, distribution and duration of electromagnetic radiation emitted from the plurality of optical fibers.

70. (Currently Amended) The dental device of claim 66, wherein the dental device further comprises a reflective panel disposed between the at least one optical fiber and the dental strip structure.

71. (Previously Added) The dental device of claim 66, further comprising a diffuser panel disposed over the at least one optical fiber.

Application No. 10/624,847
June 24, 2005
Page 9

72. (Currently Amended) A method for exposing teeth to electromagnetic radiation, the method comprising the following:

providing a dental device, which comprises a dental band having a substantially planar configuration, and having a substantially planar surface that is constructed to be applied and attached to at least one tooth of a patient, and at least one optical fiber disposed on or within the dental band;

applying a dentifrice;

applying the substantially planar surface of the dental device to a subject's teeth; and

activating a source of electromagnetic energy so that electromagnetic radiation is emitted from the at least one optical fiber in a direction away from the substantially planar surface and toward the dentifrice.

73. (Previously Added) The method of claim 72, wherein:

the step of applying a dentifrice comprises a step of applying a dentifrice containing an agent having at least one of cleaning, sterilizing and whitening properties; and

the step of activating a source of electromagnetic energy comprises a step of activating a source of electromagnetic energy so that electromagnetic radiation is emitted from the at least one optical fiber in a direction toward the subject's teeth.

74. (Previously Added) The method of claim 72, wherein:

the step of applying a dentifrice comprises a step of applying a dentifrice containing at least one of a peroxy compound, an oxidoreductase agent, an antibacterial agent, an anti-carries agent, an anti-plaque agent or plaque control activator, an anti-tartar agent, a desensitizing agent, an etching agent, a photosensitizer or a photodynamic therapy photosensitizer, a whitening agent, and a pigment; and

the step of activating a source of electromagnetic energy comprises a step of activating a source of electromagnetic energy so that electromagnetic radiation is emitted from the at least one optical fiber in a direction toward the subject's teeth.

Application No. 10/624,847
June 24, 2005
Page 10

75. (Previously Added) The method of claim 73, and further comprising a step of the agent being at least partially activated by the electromagnetic radiation emitted from the at least one optical fiber.

76. (Previously Added) The method of claim 72, wherein the applying of a dentifrice is followed by applying a protective layer over the dentifrice.

77. (Previously Added) The method of claim 76, wherein:
the protective layer is peeled off of the dental device before the dental device is applied to the subject's teeth; and
the applying of the dental device to a subject's teeth is followed by at least part of the dentifrice contacting the subject's teeth.

78. (Previously Added) The method of claim 76, wherein the applying of the dental device to a subject's teeth is followed by the protective layer being degraded by enzymes within the subject's mouth to thereby expose at least part of the dentifrice.

79. (Previously Added) The method of claim 72, wherein the step of applying a dentifrice comprises a step of applying a dentifrice to the dental device.

80. (Previously Added) The method of claim 72, wherein the step of applying a dentifrice comprises a step of applying a dentifrice to a subject's teeth.

81. (Previously Added) The method of claim 72, wherein the at least one optical fiber comprises a plurality of optical fibers.

82. (Previously Added) The method of claim 72, wherein the dentifrice comprises at least one of a peroxy compound and a fluoride.

Application No. 10/624,847
June 24, 2005
Page 11

83. (Previously Added) The method of claim 72, wherein the dentifrice comprises an anti-carries agent.

84. (Previously Added) The method of claim 72, wherein the dentifrice comprises at least two of a peroxy compound, an oxidoreductase agent, an antibacterial agent, an anti-carries agent, an anti-plaque agent or plaque control activator, an anti-tartar agent, a desensitizing agent, an etching agent, a photosensitizer or photodynamic therapy photosensitizer, and a whitening agent.

85. (Previously Added) The method of claim 72, wherein the at least one optical fiber comprises a layer of woven optical fibers.

86. (Previously Added) The method of claim 72, further comprising at least one compartment located on or within the dental band, the at least one compartment constructed to contain a dentifrice with an active ingredient sensitive to electromagnetic radiation.

87. (Previously Added) The method of claim 86, wherein the at least one compartment is located at a surface of the dental band that is disposed between the at least one optical fiber and the subject's teeth when the dental band is attached thereto.

88. (New) A dental device for exposing teeth to electromagnetic radiation, comprising:
a dental band constructed to be at least partially applied and attached to at least one tooth;
a protective layer attached to the dental band and constructed to be at least partially removed to reveal at least one compartment; and
at least one electromagnetic energy emitting element attached to the dental band and oriented to emit electromagnetic radiation from the electromagnetic energy emitting element toward a tooth surface.

89. (New) The dental device of claim 88, wherein the at least one compartment is at least partially filled with a dentifrice.

Application No. 10/624,847
June 24, 2005
Page 12

90. (New) The dental device of claim 88, and further comprising a dentifrice in proximity to the dental band, the dentifrice comprising a photosensitizer that is at least partially activated upon emission of electromagnetic energy from the electromagnetic energy emitting element.

91. (New) The dental device of claim 90, wherein the dentifrice further comprises an active ingredient.

92. (New) The dental device of claim 91, wherein the active ingredient comprises fluoride.

93. (New) The dental device of claim 88, and further comprising a dentifrice in proximity to the dental band, the dentifrice comprising a photosensitizer in combination with an active ingredient.

94. (New) The dental device of claim 93, wherein the dentifrice is a transparent gel.

95. (New) The dental device of claim 93, wherein the active ingredient is caused to be at least partially activated upon the emitting of electromagnetic energy from the electromagnetic energy emitting element.

96. (New) The dental device of claim 95, wherein the dentifrice comprises a fluoride containing gel.

97. (New) The dental device of claim 95, wherein the dentifrice comprises an anti-caries agent.

98. (New) The dental device of claim 95, wherein the dentifrice comprises an antibacterial agent.

Application No. 10/624,847
June 24, 2005
Page 13

99. (New) The dental device of claim 89, wherein the dentifrice comprises a desensitizing agent.

100. (New) The dental device of claim 89, wherein at least part of the protective layer is constructed to be peeled off of the dental device to expose the dentifrice.

101. (New) The dental device of claim 89, wherein:
at least part of the protective layer comprises a material subject to degradation by enzymes contained in a subject's mouth; and
degradation of the protective layer by the enzymes exposes the dentifrice.

102. (New) The dental device of claim 89, wherein the dentifrice comprises a desensitizing agent that can be activated when electromagnetic energy is emitted by the electromagnetic energy emitting element.

103. (New) The dental device of claim 89, wherein the dentifrice consists essentially of a fluoride containing gel.

104. (New) The dental device of claim 89, wherein the dentifrice comprises an anti-caries agent.

105. (New) The dental device of claim 89, wherein the dentifrice comprises an antibacterial agent.

106. (New) The dental device of claim 89, wherein the dentifrice comprises a photosensitive agent.

107. (New) The dental device of claim 89, wherein the dentifrice comprises an active ingredient sensitive to electromagnetic radiation.

Application No. 10/624,847
June 24, 2005
Page 14

108. (New) The dental device of claim 88, wherein the at least one compartment comprises a plurality of compartments.

109. (New) The dental device of claim 88, wherein the electromagnetic energy emitting element is an electrochemiluminescent material.

110. (New) A dental device for exposing teeth to electromagnetic radiation, comprising:
a dental band constructed to be at least partially applied and attached to at least one tooth;
and

at least one electromagnetic energy emitting element attached to the dental band and oriented to emit electromagnetic radiation from the electromagnetic energy emitting element toward a tooth surface;

wherein the dental device comprises a dry chemical heat-emitting material.

111. (New) The dental device of claim 110, wherein the dental device is constructed to emit heat after a user bites down on the dental device.

112. (New) The dental device of claim 110, further comprising a circuit for varying at least one of an intensity, distribution and duration of electromagnetic radiation emitted from the electromagnetic energy emitting element.

113. (New) The dental device of claim 110, further comprising a transparent panel disposed over the electromagnetic energy emitting element.

114. (New) A dental device for exposing teeth to electromagnetic radiation, comprising:
a dental band constructed to be at least partially applied and attached to at least one tooth;

Application No. 10/624,847
June 24, 2005
Page 15

at least one electromagnetic energy emitting element attached to the dental band and oriented to emit electromagnetic radiation from the electromagnetic energy emitting element toward a tooth surface; and

a reflective panel disposed between the electromagnetic energy emitting element and the dental band, so that the reflective panel is positioned against a non-illuminated side of the electromagnetic energy emitting element.

115. (New) The dental device of claim 114, further comprising a diffuser panel disposed over the electromagnetic energy emitting element.

116. (New) A dental device for exposing teeth of a subject to electromagnetic radiation, comprising:

a structure structured to fit over and attach to teeth of the subject; and

at least one optical fiber configured to provide electromagnetic radiation to at least one tooth, the at least one optical fiber being disposed on or within the structure so that the electromagnetic radiation is directed toward at least one tooth of the subject.

117. (New) The dental device of claim 116, wherein the at least one optical fiber comprises a plurality of optical fibers defining an optical fiber panel.

118. (New) The dental device of claim 116, the at least one optical fiber comprising a plurality of optical fibers and the dental device further comprising a power source in communication with the plurality of optical fibers, the power source providing power to the plurality of optical fibers.

119. (New) The dental device of claim 116, the at least one optical fiber comprising a plurality of optical fibers and the dental device further comprising a circuit for varying at least one of an intensity, distribution and duration of electromagnetic radiation emitted from the plurality of optical fibers.

Application No. 10/624,847
June 24, 2005
Page 16

120. (New) A dental device for exposing teeth of a subject to electromagnetic radiation, comprising:

- a structure configured to fit over and attach to teeth of the subject;
- at least one optical fiber configured to provide electromagnetic radiation to at least one tooth, the at least one optical fiber being disposed on or within the structure so that the electromagnetic radiation is directed toward at least one tooth of the subject; and
- a reflective panel disposed between the at least one optical fiber and the structure.

121. (New) The dental device of claim 120, further comprising a diffuser panel disposed over the at least one optical fiber.

122. (New) A method for exposing teeth to electromagnetic radiation, the method comprising the following:

- providing a dental device, which comprises a dental band constructed to be applied and attached to at least one tooth of a patient, and at least one optical fiber disposed on or within the dental band;
- applying a dentifrice;
- applying the dental device to a subject's teeth; and
- activating a source of electromagnetic energy so that electromagnetic radiation is emitted from the at least one optical fiber in a direction toward the dentifrice.

123. (New) The method of claim 122, wherein:

- the step of applying a dentifrice comprises a step of applying a dentifrice containing an agent having at least one of cleaning, sterilizing and whitening properties; and
- the step of activating a source of electromagnetic energy comprises a step of activating a source of electromagnetic energy so that electromagnetic radiation is emitted from the at least one optical fiber in a direction toward the subject's teeth.

Application No. 10/624,847
June 24, 2005
Page 17

124. (New) The method of claim 122, wherein:

the step of applying a dentifrice comprises a step of applying a dentifrice containing at least one of a peroxy compound, an oxidoreductase agent, an antibacterial agent, an anti-carries agent, an anti-plaque agent or plaque control activator, an anti-tartar agent, a desensitizing agent, an etching agent, a photosensitizer or a photodynamic therapy photosensitizer, a whitening agent, and a pigment; and

the step of activating a source of electromagnetic energy comprises a step of activating a source of electromagnetic energy so that electromagnetic radiation is emitted from the at least one optical fiber in a direction toward the subject's teeth.

125. (New) The method of claim 123, and further comprising a step of the agent being at least partially activated by the electromagnetic radiation emitted from the at least one optical fiber.

126. (New) A method for exposing teeth to electromagnetic radiation, the method comprising the following:

providing a dental device, which comprises a dental band constructed to be applied and attached to at least one tooth of a patient, and at least one optical fiber disposed on or within the dental band;

applying a dentifrice;

applying a protective layer over the dentifrice;

applying the dental device to a subject's teeth; and

activating a source of electromagnetic energy so that electromagnetic radiation is emitted from the at least one optical fiber in a direction toward the dentifrice.

127. (New) The method of claim 126, wherein:

the protective layer is peeled off of the dental device before the dental device is applied to the subject's teeth; and

Application No. 10/624,847
June 24, 2005
Page 18

the applying of the dental device to a subject's teeth is followed by at least part of the dentifrice contacting the subject's teeth.

128. (New) The method of claim 126, wherein the applying of the dental device to a subject's teeth is followed by the protective layer being degraded by enzymes within the subject's mouth to thereby expose at least part of the dentifrice.

129. (New) The method of claim 122, wherein the step of applying a dentifrice comprises a step of applying a dentifrice to the dental device.

130. (New) The method of claim 122, wherein the step of applying a dentifrice comprises a step of applying a dentifrice to a subject's teeth.

131. (New) The method of claim 122, wherein the at least one optical fiber comprises a plurality of optical fibers.

132. (New) The method of claim 122, wherein the dentifrice comprises at least one of a peroxy compound and a fluoride.

133. (New) The method of claim 122, wherein the dentifrice comprises an anti-carries agent.

134. (New) The method of claim 122, wherein the dentifrice comprises at least two of a peroxy compound, an oxidoreductase agent, an antibacterial agent, an anti-carries agent, an anti-plaque agent or plaque control activator, an anti-tartar agent, a desensitizing agent, an etching agent, a photosensitizer or photodynamic therapy photosensitizer, and a whitening agent.

135. (New) The method of claim 122, wherein the at least one optical fiber comprises a layer of woven optical fibers.

Application No. 10/624,847

June 24, 2005

Page 19

136. (New) The method of claim 122, further comprising at least one compartment located on or within the dental band, the at least one compartment constructed to contain a dentifrice with an active ingredient sensitive to electromagnetic radiation.

137. (New) The method of claim 136, wherein the at least one compartment is located at a surface of the dental band that is disposed between the at least one optical fiber and the subject's teeth when the dental band is attached thereto.